CLAIM AMENDMENTS

1   1.   (currently amended) A method for locating a mobile

2   terminal [[(MS, MS2, ...)]] within a mobile communication network

3   comprising at least one base station [[(BTS1, BTS2, BTSn)]], the

4   method comprising the <u>steps of:</u> ~~measurement of~~

5   <u>measuring</u> a set of physical dimensions that identify,

6   according to respective functions, locating coordinates ~~(x, y, z)~~

7   of said mobile terminal, ~~characterized in that it comprises the~~

8   ~~steps of:~~

9   [[-]]   generating, starting from said set of physical dimensions

10   and respective functions, a global locating error function [[(0)]]

11   which has a minimum for values of said locating co-ordinates ~~(x, y,~~

12   ~~z)~~ corresponding with the position occupied by said mobile

13   terminal, <u>said global error function being the difference between</u>

14   <u>the dimensions included in said set and zero,</u>

15   [[-]]   seeking the minimum of said error function [[(0)]] by

16   varying at least one of said locating co-ordinates ~~(x, y, z)~~, and

17   [[-]]   locating said mobile terminal in correspondence with the

18   value of said at least one locating co-ordinate corresponding to

19   said minimum.

1   2.   (currently amended) The method as claimed in claim

2   1~~, characterized in that~~ <u>wherein</u> said set of physical dimensions

3   comprises at least a dimension selected within the group

4   constituted by:

5   [[-]]   signal power received by said mobile terminal starting

6   from said at least one base station,

7   [[-]]   timing advance [[(TA)]],

8   [[-]]   observed time differences [[(OTD)]], and

9   [[-]]   time of arrival [[(TOA)]].

1   3.   (currently amended) The method as claimed in claim 1

2   or 2 ~~characterized in that~~ <u>wherein</u> the measuring step comprises the

3   step of<u>:</u>

4   [[-]]   performing measurements able to identify at least a value

5   of position or distance with determined precision.

        4.   (canceled)

1   5.   (currently amended) The method as claimed in claim 1

2   ~~, 2 or 3, characterized in that~~ <u>wherein</u> said global error is

3   defined as the mean square error of the dimensions of said set.

1   6.   (currently amended) The method as claimed in any of

2   the previous claims ~~, characterized in that~~ <u>wherein</u> said global

3   error function [[(4)]] is obtained starting from a plurality of

4   dimensions of said set.

1   7.   (currently amended) The method as claimed in claim 1

2   ~~, 2 or 3, characterized in that~~ <u>wherein</u> said set comprises one

3   single dimension, so that said global error function [[(4)]] is

4   generated starting from the single dimension of said set.

1   8.   (currently amended) The method as claimed in ~~any of~~

2   ~~the previous claims, characterized in that it comprises,~~ claim 1,

3   further comprising the step of:

4   to seek said minimum, ~~the execution of~~ executing an

5   iterative process evaluating [[of]] said global error function for

6   different values of said at least one location co-ordinate [[(xo,

7   Yo, zo...; yn, z.)]] corresponding to successive different points

8   of the space covered by said communication network.

1   9.   (currently amended) The method as claimed in claim

2   ~~8, characterized in that it comprises~~ further comprising the step

3   of:

4   interrupting said iterative process when the absolute

5   distance between two successive points is below a determined

6   threshold value.

1   10. (currently amended) The method as claimed in ~~any of~~

2   ~~the previous claims, characterized in that~~ claim 1 wherein it is

3   applicable in a three-dimensional reference system.

1   11. (currently amended) A system for locating a mobile

2   terminal [[(MS1, MS2, ...)]] within a mobile communication network

3   comprising at least one base station [[(BTS1, BTS2, BTSn)]], the

4 system comprising at least a locating module [[(PCF)]] configured

5 to measure a set of physical dimensions that identify according to

6 respective functions location co-ordinates ~~(x, y, z)~~ of said mobile

7 terminal~~, characterized in that~~ wherein said locating module ~~(PCF)~~

8 ~~is~~ being configured to:

9 [[-]]   generate, starting from said set of physical dimensions

10 and respective functions, a global locating error function [[(4)]]

11 which allows a minimum for values of said locating co-ordinates ~~(x,~~

12 ~~y, z)~~ corresponding with the position occupied by said mobile

13 terminal, the global error function being the difference between

14 the dimensions included in the set and zero,

15 [[-]]   seek the minimum of said error function [[(4)]] varying

16 at least one of said locating co-ordinates ~~(x, y, z)~~, and

17 [[-]]   locate said mobile terminal in correspondence with the

18 value of said at least one locating co-ordinate ~~(x, y, z)~~

19 corresponding to said minimum.

1   12.   (currently amended) The system as claimed in claim

2 11~~, characterized in that~~ wherein said set of physical dimensions

3 comprises at least one dimension selected in the group constituted

4 by:

5 [[-]]   signal power received by said mobile terminal starting

6 from said at least one base station,

7 [[-]]   timing advance [[(TA)]],

8 [[-]]   observed time differences [[(OTD)]], and

9 [[-]]   time of arrival [[(TOA)]].

1   13.   (currently amended) The system as claimed in claim
2 11 or claim 12, characterized by, further comprising:
3   measuring devices able to obtain measurements to identify
4 at least a position value of said mobile terminal or distance with
5 a determined precision.

       14.   (canceled)

1   15.   (currently amended) The system as claimed in claim
2 11 , 12 or 13, characterized in that wherein said global error
3 function is defined as the mean square error of the dimensions of
4 said set.

1   16.   (currently amended) The system as claimed in claim
2 11 , 12 or 13, characterized in that wherein said locating module
3 [[(PCF)]] is configured to obtain said global error function
4 [[($)]] starting from a plurality of dimensions of said set.

1   17.   (currently amended) The system as claimed in claim
2 11, 12 or 13, characterized in that wherein said locating module
3 [[(PCF)]] is configured to obtain said global error function
4 [[(0)]] starting from said set comprises one single dimension, so
5 that said global error function [[(0)]] is generated starting from
6 the single dimension of said set.

1   18.   (currently amended) The system as claimed ~~in any of~~

2   ~~the claims from~~ claim 11 ~~through 17, characterized in that~~ wherein

3   to seek said minimum, said locating module [[(PCF)]] is configured

4   to carry out an iterative process for evaluating said global error

5   function for different values of said at least one locating

6   co-ordinate [[Yo, zo:-..; xn, yn, zn)]] corresponding to the

7   successive different points of the space covered by said

8   communication network.

1   19.   (currently amended) The system as claimed in claim

2   18~~, characterized in that~~ wherein said locating module [[(PCF)]] is

3   configured to interrupt said iterative process when the absolute

4   distance between two successive points is below a determined

5   threshold value.

1   20.   (currently amended) The system as claimed in ~~any of~~

2   ~~the claims from~~ claim 11 ~~to 19 characterized in that~~ wherein said

3   error function [[(0)]] is able to operate in a three-dimensional

4   reference system.

1   21.   (currently amended) The system as claimed in ~~any of~~

2   ~~the claims from~~ claim 11 ~~to 20, characterized in that it further~~

3   ~~comprises~~ , further comprising:

4   a module [[(MGC)]] to allow the exchange of data between

5   said mobile terminal and said at least one base station to identify

6   at least one dimension of said set.

1   22.   (currently amended) The mobile terminal configured
2   for use in a system as claimed in ~~any of the claims from~~ <u>claim</u> 11
3   ~~to 21, characterized in that~~ <u>wherein</u> the terminal comprises at
4   least part of said locating module [[(PCF)]] integrated in the
5   mobile terminal itself.

1   23.   (currently amended) <u>A</u> software product able to be
2   loaded directly into a memory of a digital computer associated with
3   a mobile terminal [[(MS1, MS2,...)]] as claimed in claim 22 and
4   comprising portions of software code able to implement said at
5   least part of said locating module [[(PCF)]] integrated in the
6   mobile terminal itself when said software product is run on said
7   digital computer.

1   24.   (currently amended) <u>A</u> communication network
2   comprising at least a base station [[(BTS1, BTS2, BTSn)]] and a
3   plurality of mobile terminals [[(MS1, MS2, ...)]], the network
4   comprising a locating system as claimed in ~~any of the claims from~~
5   <u>claim</u> 11 [[to 21]].

1   25.   (currently amended) <u>The</u> communication network as
2   claimed in claim 24~~, characterized in that it comprises~~ <u>further</u>
3   <u>comprising</u> an interface module [[(GW)]] for interfacing with an IP
4   network, said interface module being configured in such a way as to
5   allow the transfer of at least one between:

6   [[-]]   an order to locate one of said mobile terminals starting

7   from a source [[(U)]] connected to said IP network, and

8   [[-]]   a delivery information generated by a source [[(U)]]

9   connected to said IP network, directed to said mobile terminals

10   [[(MS1, MS2, ...)]] and referred to the location of at least one of

11   said mobile terminals.